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ABSTRACT

This resource bulletin provides information which can be used in classrooms, at conferences, and at meetings with parents to increase public awareness and acceptance of a new New York City ordinance which requires the installation of smoke detectors in apartments. The booklet contains information on the following: (1) background information for teachers on the legislation; (2) questions and answers about smoke detectors; (3) diagrams of ionization smoke detectors and photoelectric smoke detectors; (4) diagrams of proper locations of smoke detectors; (5) use of detector test buttons; (6) lesson plans and activities for elementary and secondary level pupils; (7) smoke detector check list; and (8) a family smoke detector test log for its ensuring continuing good operation. (PS)

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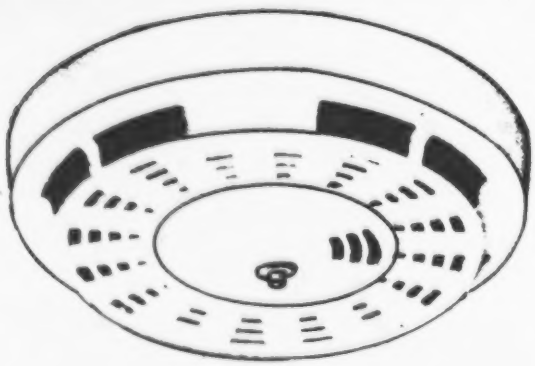
SMOKE DETECTORS SAVE LIVES



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A MESSAGE FROM THE CHANCELLOR

Mayor Edward Koch has asked the New York City Public Schools to help spread an important message regarding a new city ordinance, which requires the installation of smoke detectors in apartments.

In response to this request the Board of Education is working together with Deputy Mayor Nathan Leventhal and the Mayor's Office of Operations in developing an education campaign aimed at increasing public awareness and acceptance of this new law.

We, therefore, call upon teachers and supervisors to join the efforts of other city agencies and volunteers from the private sector in bringing this vital message to our students and their families. The information contained in this resource bulletin may be presented in a variety of appropriate settings - the classroom, the auditorium, at faculty conferences and meetings with parents and the community.

Please remember, "Smoke Detectors Save Lives!"

CHANCELLOR OF SCHOOLS

FOREWORD

On September 30, 1981 a new law went into effect in New York City which requires the installation of approved smoke detectors in residential multiple dwellings. In an effort to raise public awareness of the life-safety benefits of smoke detectors, as well as to emphasize the responsibility of owners and tenants in the proper maintenance of these devices, a multifaceted citywide public education campaign is being launched.

The Fire Department reports that perhaps 117 fatalities, out of 289 fire related deaths in New York City in 1980, could have been prevented by the early warning of residential smoke detectors. Smoking in bed and carelessness were the attributed cause of 92 of these deaths. Smoke and gases as well as flames and heat claimed 197 lives in multiple dwelling fires, while 40 deaths occurred in one and two family homes.

Common sense suggests to us that an early warning is the key to fire survival and reduction of property loss due to fire, and fire department statistics gathered from communities throughout the United States support this suggestion.

Teachers will play an important role in helping their students to understand the need for properly installed and maintained smoke detectors in their homes. The suggested activities in this guide, may be used to develop experiences that will take the mystery out of these devices and outline the rights and responsibilities of both owners and tenants. These resources should provide children and their families with valuable information and skills to help them escape the devastating effects of fire.

Charlotte Frank

CHARLOTTE FRANK
Executive Director
Division of Curriculum and Instruction

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BACKGROUND INFORMATION FOR TEACHERS

The smoke detection legislation, Local Law 62, signed by Mayor Edward I. Koch on July 27, 1981, requires owners of all apartment houses, hotels, and rooming houses to purchase and install approved smoke detectors in all dwelling units, and requires tenants to cooperate with the installation, reimburse the landlord up to $10 of the cost of the smoke detector within one uear of the installation, and to maintain the unit(s) in his apartment. The law also requires that these detectors be installed and operable by January 1, 1982. (Under certain extenuating circumstances an owner may obtain special permission to extend the period of compliance to June 30, 1982. This extension may, upon good cause, be granted by the Commissioner, Department of Buildings.

Furthermore, the owner is required to post a notice in a form approved by the Commissioner of the Department of Housing Preservation and Development in a common area of the building, informing the Occupants of that building, that the owner is required by law to install one or more approved and operational smoke detecting devices in each dwelling unit in the building, and that each occupant is responsible for the maintenance and repair of these devices and for replacing any or all such devices which are stolen, removed, missing or rendered inoperable during the tenant's occupancy of the dwelling unit.

Enforcement of the new smoke detection law falls under New York City's building and housing maintenance codes. Violators of the new code are liable to fines of up to $1,000, and up to one year in jail for each offense. The purpose of this teacher's guide, however, is not to stress the penalty for noncompliance, but to underscore the importance of proper installation and care of these life saving alarms. The suggested lesson plans and answers to commonly asked questions about smoke detectors and the new law, supplies on the following pages, are intended to help you, the teacher, impress on your students their role in this important citywide program to reduce loss of life and property damage due to fires.

ANSWERS TO QUESTIONS ABOUT SMOKE DETECTORS

Q. What are smoke detectors?

A. Smoke detectors are electronic devices that sense particles of smoke produced by various types of fires.
The resulting alarm alerts children and adults in time to escape a burning building. They have repeatedly save persons who were sleeping when fires have started.

Q. How do smoke detectors operate?

A. Currently two types of smoke detectors are generally available. In the photoelectric-type a beam of light shines across a space in a darkened chamber. Light rays cannot be seen unless it is reflected to the eyes or a detector by some object. A photoelectric sensor sits off to the side, but facing the beam of light. When the chamber is smoke-free the sensor "sees" no light. When particles of smoke of a sufficient density enter the chanber some of the light is reflected into the photo-electric "eye", which in turn sets off the alarm.
The second type of detector, the ionization-type, uses a small, safe amount of radioactive material * in a special chamber to ionize the air between two electrical terminals. These ions (electrically charged particles) allow a small electrical current to flow between the two terminals. When smoke enters the chamber, the smoke particle cause a decrease in the flow of current and the alarm is sounded.

Q. Is one type better than the other?

A. Because of their design characteristics, photoelectric detectors react more quickly to slow, smoldering fires (bedding, furniture stuffing, some insulation, etc.), while ionization detectors respond faster to rapid, clean-burning fires (paper, Christmas trees, drapery, etc.).
A detector which provided the characteristics of each type would be ideal. Another approach would be to install both types.
But authorities agree that adequate protection can be expected from the installation of either type of detector.
Installation and maintenance are the same for both types.

*Americium, $_{95}Am^{241}$

Q. Which type of smoke detector is acceptable according to the new law?

A. Either type is acceptable (photoelectric or ionization) as long as it has been approved by one of three testing laboratories: Underwriters' Laboratories, Inc., Canadian Standards Association, or Underwriters' Laboratories of Canada. These approved units will either be wired into the electrical circuitry in the dwelling or may be battery powered. Battery units must have a test button and emit an audible signal when the battery gets too weak to properly detect smoke particles. Units are available with blinking strobe lights that warn persons who have severe hearing impairments. The alarm must be rated at 85 decibels or more.

Q. How many are required?

A. Only one unit is required per dwelling unit or apartment if there is only one sleeping area. If there are more than one sleeping area in the apartment, then one detector is to be installed outside of each separate sleeping area (within 15 feet of each sleeping area).

Q. How should they be installed?

A. Manufacturer's instructions should be followed. The unit should be outside of the rooms used for sleeping and mounted away from heating or air ducts, which might cause false alarms. Excessive steam or kitchen smoke and heat might also set off alarms. If mounted on the wall, the unit should be no closer than 4 inches to the ceiling. If mounted on the ceiling the detector should be no closer than 4 inches from any wall. This clearance allows for free air flow around and through the detector.

Q. According to the law, who is required to install detectors?

A. Owners of multiple dwellings of three or more units are required to install one or more device per living unit, depending upon the the number and arrangement of bedrooms.
Owners are also required to provide tenants with the manufacturer's instructions; post a notice informing the tenants of their rights and duties; and replace any unit with manufacturing defects.
Problems caused by misuse or poor maintenance must be resolved by the tenant.

Q. What are the tenant's responsibilities?

A. The tenant must cooperate with the owner during installation. The tenant must also maintain the device in good repair, testing and changing batteries when necessary. The tenant must reimburse the owner a maximum of $10 per detector within one year of installation. Stolen or missing detectors are replaced by the tenant.

Q. What are a new tenant's responsibilities?

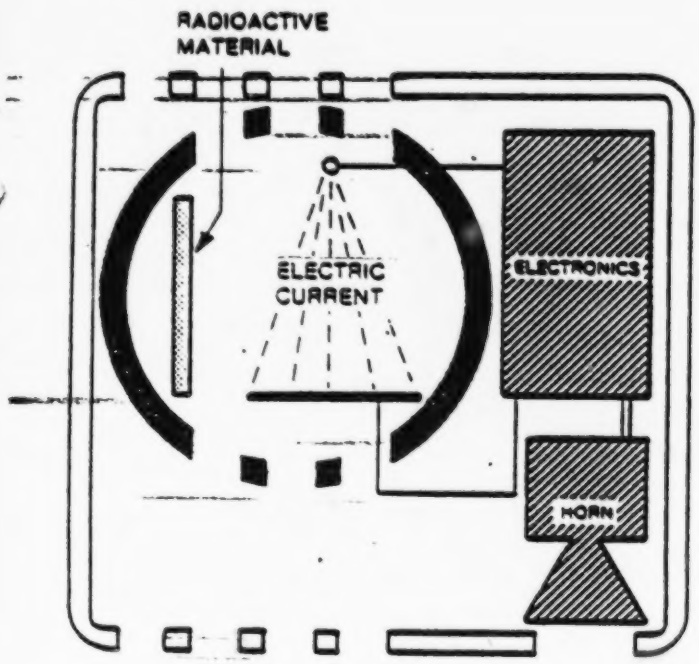
A. The owner must provide new tenants with operable smoke detectors, which are maintained, as described above, by the new tenant.

Q. Is the radioactive material in ionization-type detectors dangerous?

A. According to the U.S. Nuclear Regulatory Commission, if you held an ionization smoke detector close to you for eight hours a day through a whole year, you would receive only a tenth as much radiation as you would get on one round trip airline flight across the United States of America. (A typical detector contains 0.9 microcuries of Americium^{241}, which has a half-life of 475 years).

Ionization Smoke Detectors

1



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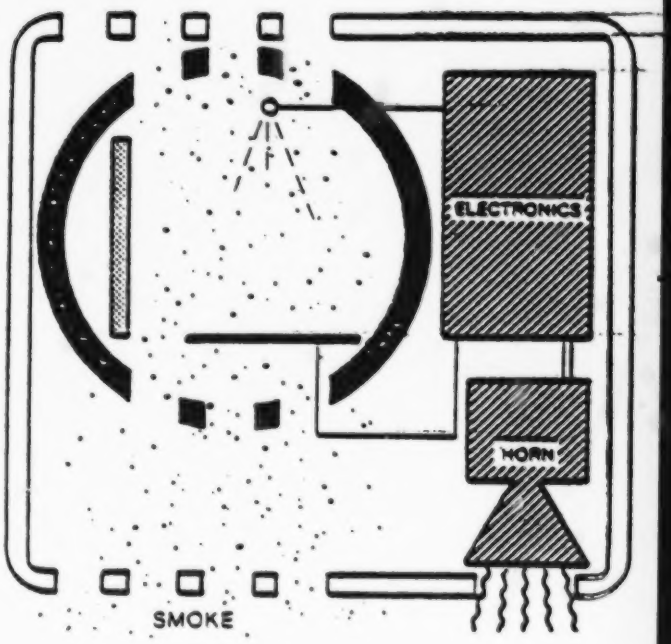
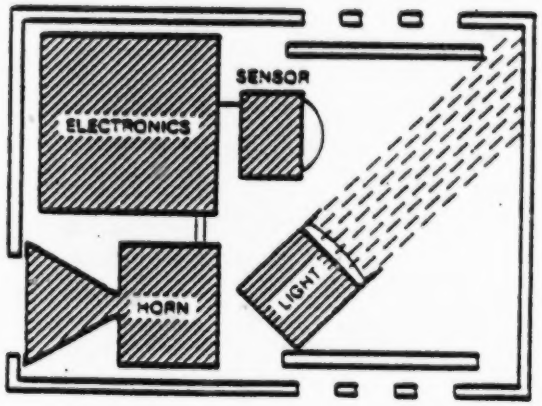


Photoelectric Smoke Detectors

1



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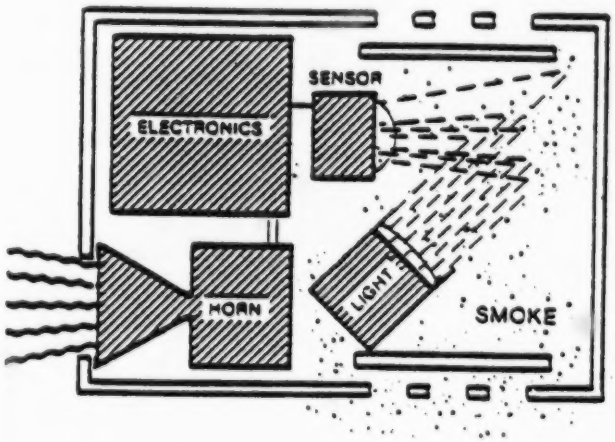
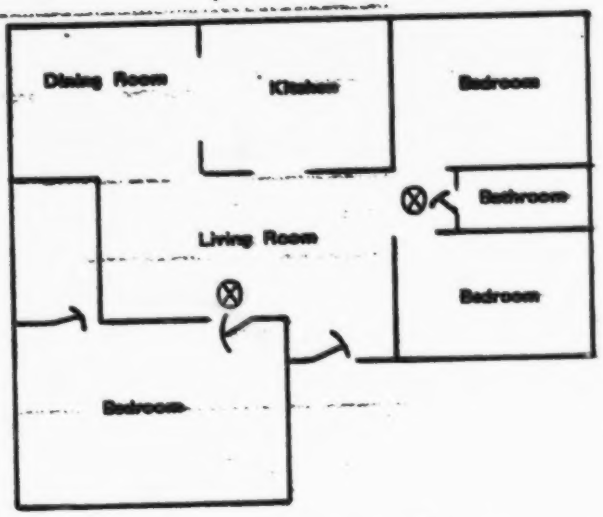
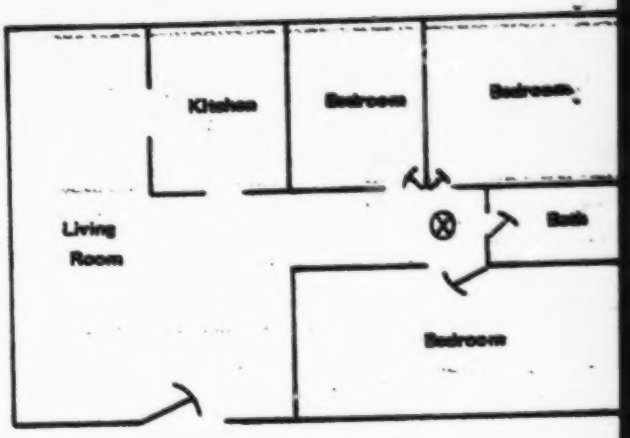


PROPER LOCATION OF SMOKE DETECTORS IN A TYPICAL THREE BEDROOM APARTMENT ⊗



APARTMENT WITH TWO SEPARATE SLEEPING AREAS



APARTMENT WITH ONE SLEEPING AREA

NOTE: In a multiple dwelling fires are likely to occur in

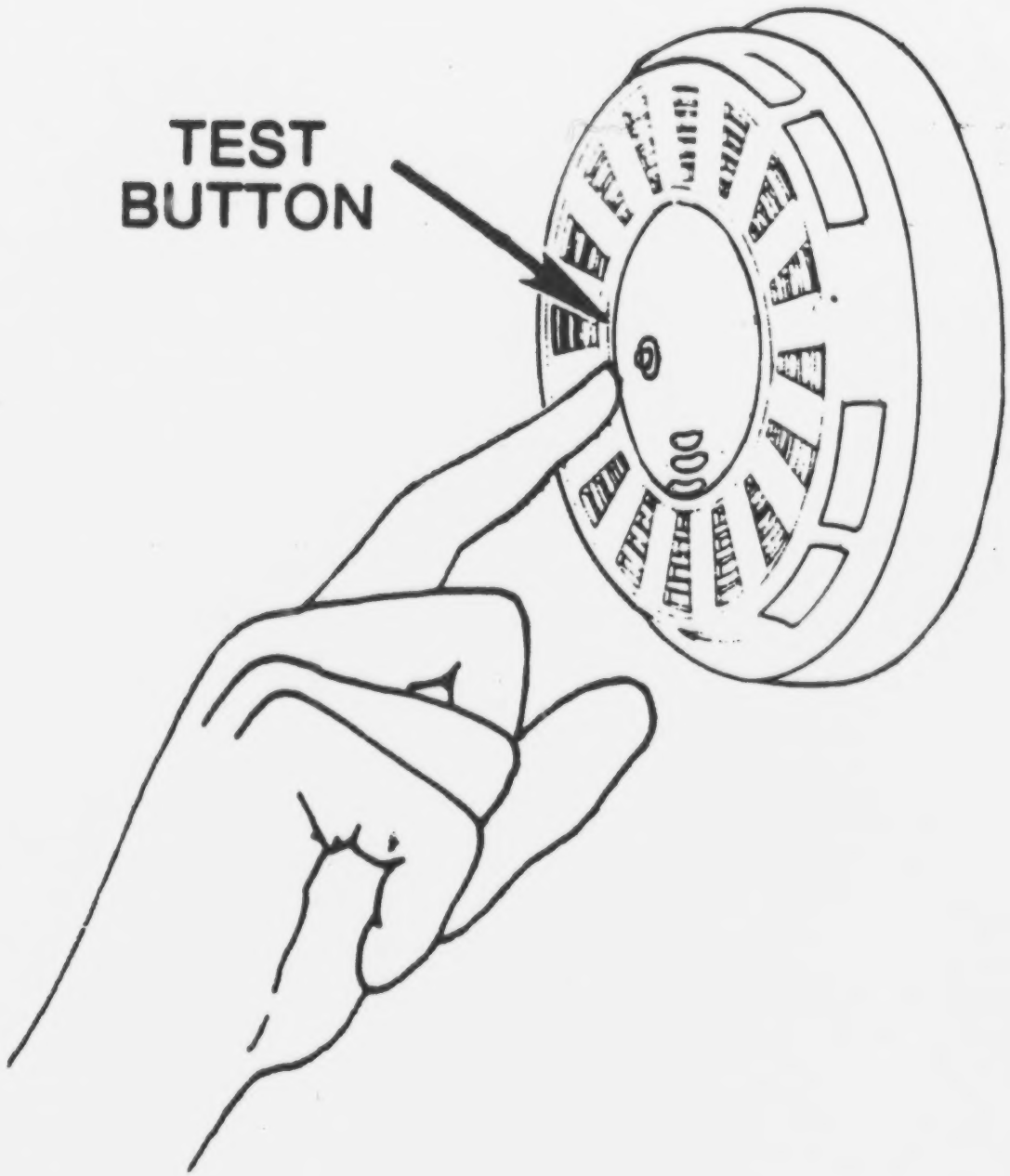
KITCHENS

LIVING ROOM/LOUNGE AREAS

SLEEPING AREAS

HEATING EQUIPMENT

STORAGE AREAS


TEST
BUTTON

MOTIVATION

Light a punk, incense stick or short length of cotton rope. Blow out the flame and allow the smoke to rise from the smoldering material for a moment. Extinguish the punk with water after the class has had an opportunity to observe and explain that the smoke rises.
Demonstrate how a smoke detector operates using a smoking punk.#

AIM

Smoke and hot gases from a fire collect near the ceiling. Smoke detectors save lives by warning of fires at home.

PIVOTAL QUESTIONS

* Give some other examples that show how smoke rises.
* Where would most of the hot smoke and poisonous gases from a fire collect if a room was ablaze?
* Where would the cooler, cleaner air collect?
* How would smoke detectors help people who are asleep while a fire starts in their apartment?
* What must we do to be sure our smoke detectors work correctly?

SUGGESTED ACTIVITIES

* Develop a checklist of tenant's responsibilities (see sample).
* Develop a record of testing for use in the students' homes.
* Discuss why the safest way of leaving a burning building is to stay low, while moving cautiously yet quickly through a smoke filled room.
* Discuss or write about other emergency supplies that might be of use in the home. (flashlights, fire extinguisher, ladder).

SUMMARY

* Smoke detectors warn us when hot gases from a fire rise to the ceiling.
* We must take care of our smoke detectors so that they will be in good condition when we need them.

An actual demonstration would be highly desirable. If a detector is not available, you may use the illustration provided on p. 7 of this guide.

MOTIVATION

Display and discuss news clippings that describe residential fires in the community. Ask class to pretend that it has been chosen to produce a television news short addresses the value of properly maintained smoke detectors in the home.

AIM

To develop an understanding of how tenants should maintain correctly installed smoke detectors.

PIVOTAL QUESTIONS

* Has anyone ever had firsthand experience with escape from a burning building? Why is an early warning important?
* How do smoke detectors work to provide an early warning?
* What slogan would you use in the news short?
* How would you illustrate the proper installation of smoke detectors in an apartment house?
* How would you show the proper way to maintain a detector?
* What would be the best way to show a family developing a fire escape plan?

SUGGESTED ACTIVITIES

* Visit the library and research information on smoke detectors and their use.
* Draw posters to illustrate the slogans developed and make these a part of your school's awareness campaign.
* Write a script for a news short on the installation and routine care of smoke detectors.
* Produce an auditorium program on this topic.
* Develop an effective an escape plan for your family and hold a fire drill. Meet outside the building at some predetermined place a safe distance from your building

SUMMARY

By involving students in an active project they exercise their research/study skills and learn their role in maintaining smoke detectors and preparing for a fire emergency.

SMOKE DETECTOR CHECKLIST

- ☐ Detector outside of each sleeping area
- ☐ Wall mounted units no closer than 4 inches to ceiling
- ☐ Ceiling mounted units no closer than 4 inches to walls
- ☐ Fresh battery in unit
- ☐ Spare bulb on hand (for photoelectric type, alarm will sound warning when bulb blows out)
- ☐ Vacuum dust and insects from unit periodically
- ☐ Check battery weekly
- ☐ Replace battery annually regardless of test results
- ☐ Certain that everyone knows the family escape plan
- ☐ Carefully read and save instruction manual for your detector

MY FAMILY

SMOKE DETECTOR TEST LOG

DATE	INSPECTOR'S INITIALS	VACUUM UNIT(S)	DETECTOR #1 BATTERY OK	DETECTOR #2 BATTERY OK

BATTERY WAS CHANGED ON _____